



GTCCO Corporation

gtco-padTM

micro gtco-padTM



gtco-padTM

FEATURES

0.001" Resolution
 ± 0.005 " Accuracy
No adjustments
No preventive maintenance
Electronics built into tablet
Two year tablet warranty
Low cost

TYPICAL USES

NC Machine Programming
Medical Data Analysis
Computer Aided Design
Computer Aided Manufacturing
Strip Chart Analysis
Statistical Data Analysis
Image Analysis
Entry of Menu Data
Map and Land Planning Analysis

DESCRIPTION

GTCO-Pad's performance, reliability and design are unprecedented. Measuring only 1.7 inches high, this single-unit tablet/digitizer has no adjustments, requires no preventive maintenance and all electronics are built into the base of the tablet. Just supply DC power, connect GTCO-Pad to an RS-232 output device and start digitizing. Designed for industrial applications requiring the conversion of graphic data into digital form for recording, computer processing or interactive display, GTCO-Pad provides a resolution of 0.001 inch (0.025 or 0.1 mm) with an accuracy of ± 0.005 inch. A precision printed circuit grid array tablet with an 11" x 17" active area and our exclusive two-year warranty ensures years of troublefree high performance at a modest price.

A unique crystal controlled electromagnetic ranging technique used in conjunction with a free-movement cursor allows digitizing on materials up to one inch in thickness. The accuracy of electromagnetic ranging is unaffected by pencil lines, ink, temperature, humidity or other environmental factors. Stylus and pushbutton crosswire cursors are interchangeable, can be field repaired and provide high-level signals without preamps. The adjustment-free GTCO-Pad does not require magnetization and the cursor may be lifted from the tablet's surface while moving it to the next point to be digitized.

Standard items include a pen or stylus cursor and RS-232 interface. Options include: Micro and Firmware package, Power Supply and Cable, 16-Button Cursor, X-Y Display, and a Keyboard (ASCII).

The Micro option is remotely controlled via the RS-232 interface. Simple two character easy to remember commands are utilized: TP for two point setup, BA for begin area, SC for shift chart etc. The RS-232 control may come from any "dumb" terminal device or from a host processor.

OPTIONAL ACCESSORIES



keyboard



16-button cursor



Remote x-y display



GTCO Corporation

SPECIFICATIONS

PERFORMANCE

Resolution 0.001" (0.025 or 0.1 mm)
Accuracy ± 0.005 "

TABLET

Active area, 11" x 17" Digi-Pad
11" x 11" Demi-Pad

ORIGIN

Lower left corner

DATA MODES*

Point/Line
Continuous
Cursor pushbutton initiated single/multiple formats.
Proximity initiated multiple formats with pushbutton code (S_1) indicating when pushbutton is depressed.

CODING

ASCII

COORDINATE

Absolute (no loss of origin)

DIGITIZING SENSITIVITY

Up to 1"

FORMAT*

S_1	X_1	X_2	X_3	X_4	X_5	S_2	Y_1	Y_2	Y_3	Y_4	Y_5	S_3	S_4
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S_1 , X_5 , S_2 , Y_5 , S_3 , and S_4 are optional.

S_1 is an encoded cursor pushbutton character.

S_2 = SPACE, S_3 = CR, S_4 = LF

S_3 and S_4 may be periodic.

INTERFACE

Output Connector
Pin Assignment

RS-232C, Cinch DB25S

Pin No	Signal
1	Ground
2	Transmit Data
3	Receive Data
4	Request to Send
5	Clear to Send
6	Data Set Ready
7	Ground
20	Data Terminal Ready

EXTERNAL POWER

+5V @ 2 Amps
+12V @ 0.5 Amp (1 Amp with
Micro Option)
-12V @ 0.1 Amp (0.5 Amp with
Micro Option)

Power Input Connector

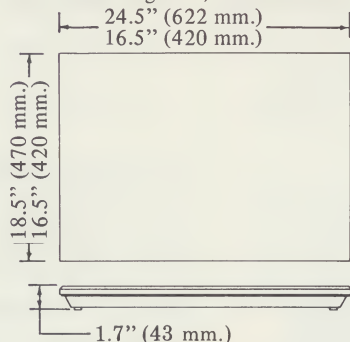
Pin	Voltage
A	+5V
B	+5V
C	GND
D	GND
E	+12V
F	+12V
H	-12V

PHYSICAL DATA

Weight

16 lbs. Digi-Pad; 10 lbs. Demi-Pad

Dimensions



MICRO GTCO-PAD OPTION

Micro GTCO-Pad Option provides computing power for the following capabilities:

1. Scaling
2. Rotation
3. Offset or floating origin
4. Super-imposing and chart shifting
5. Six digitizing modes — point, line (rate selectable), vector incremental (increment selectable), grid (grid selectable), incremental X-Y (increment selectable).
6. Five programmable formats
7. Cursor Push Button ID
8. Two Event Counters
9. Length, Length accumulation and multiplier
10. Area, Area accumulation and multiplier
11. Volume, Volume accumulation and multiplier
12. General purpose calculation and storage (+, -, ÷, · and $\sqrt{\quad}$)
13. Editing
14. Prompting
15. Floating, Fixed Point or Integer Output
16. RS232 Interface (output device)
17. RS232 Interface (control device)
18. Six fixed data character strings
19. Interactive firmware (to guide Operator)
20. Error message diagnostics (to guide Operator)
21. Direct control device to output device mode
22. Function commands assignable to cursor pushbuttons

*Programmable expanded mode and format selection with Micro Options.

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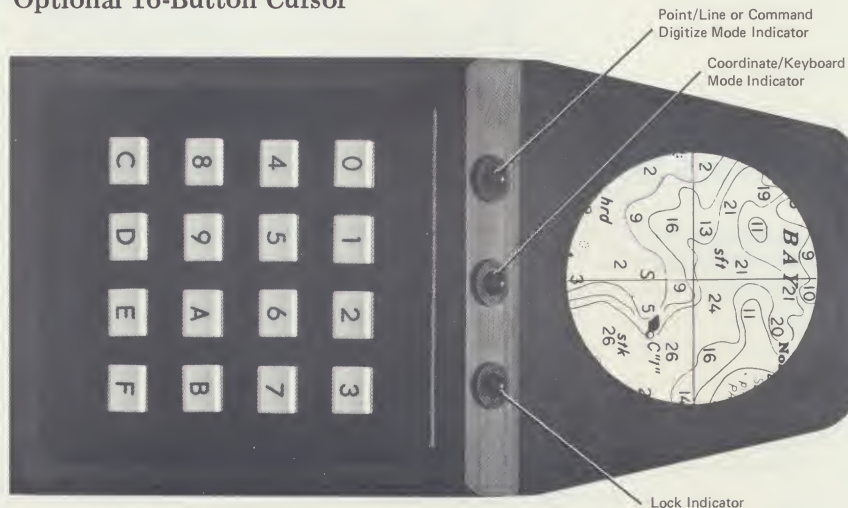


GTCO Corporation

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The graphic's technology company with a better idea. Evaluate and compare our technology and products and then join our Fortune 500 List of users who are purchasing our new patented GTCO-Pad.

Optional 16-Button Cursor



Pushbutton	Keyboard Mode Output Format**	Coordinate Mode Output Format ***					
0	0	0*	XXXXX*	SP*	YYYYY*	CR*	LF*
1	1	1	XXXXXX	SP	YYYYYY	CR	LF
2	2	2	XXXXXX	SP	YYYYYY	CR	LF
3	3	3	XXXXXX	SP	YYYYYY	CR	LF
4	4	4	XXXXXX	SP	YYYYYY	CR	LF
5	5	5	XXXXXX	SP	YYYYYY	CR	LF
6	6	6	XXXXXX	SP	YYYYYY	CR	LF
7	7	7	XXXXXX	SP	YYYYYY	CR	LF
8	8	8	XXXXXX	SP	YYYYYY	CR	LF
9	9	9	XXXXXX	SP	YYYYYY	CR	LF
A	:	:	XXXXXX	SP	YYYYYY	CR	LF
B	;	;	XXXXXX	SP	YYYYYY	CR	LF
C	<	<	XXXXXX	SP	YYYYYY	CR	LF
D	=	=	XXXXXX	SP	YYYYYY	CR	LF
E	Alternate action, selects coordinates or keyboard mode, in coordinate mode 0-9,A,B,C and D push-buttons cause an X-Y coordinate output and a single encoded character preceding the X-Y coordinate representing the button depressed. In keyboard mode, only the encoded pushbutton character is output.						
F	Alternate action, selects point or line mode.						
* Character may be included or deleted by DIP switch settings.							
*** Without Micro option. With Micro, pushbutton functions are programmable.							
** 7 level ASCII code.							

ORDERING INFORMATION

GTCO-Pad with continuous mode, stylus and RS232 Interface
 GTCO-Pad with point/line mode, stylus and RS 232 Interface
 Micro GTCO-Pad with stylus and RS232 Interface

Digi-Pad	Demi-Pad
P/N DPD-1000	P/N DMD-1000
P/N DPD-2000	P/N DMD-2000
P/N MDP-5000	P/N DMD-5000

OPTIONS

16-Button Stylus P/N DPD-100
 16-Button Cursor P/N DPD-110
 Power Supply P/N DPD-120
 *X-Y Display P/N DPD-130
 *Keyboard (ASCII) P/N DPD-140

OPTIONAL OUTPUT DEVICES

CRT Terminal P/N CRT-801
 Printer P/N PTR-802
 Mini Floppy Disc P/N MFD-803
 Mag Tape Cartridge P/N MTC-804
 User Programmable Terminal P/N UPT-805

*Not available with Micro GTCO-Pad.



**GTCO
Corporation**

MICRO DATATIZER... **"the intelligent digitizing tablet"**



General Description

The DATATIZER, a high resolution, absolute coordinate digitizing system with a microprocessor, converts any type of graphic data into digital form for recording, computer processing or interactive display use. A basic system consists of a tablet or grid digitizer, an interchangeable pen/cursor and a controller. Tablets or grids are available in standard and special sizes ranging from 6" x 6" to 42" x 60" with a resolution of 0.001". A variety of simple interfaces make the DATATIZER suitable for any existing grid or tablet application and, in most cases, by direct substitution of the DATATIZER for less effective and higher cost mechanical arms, grids or tablets.

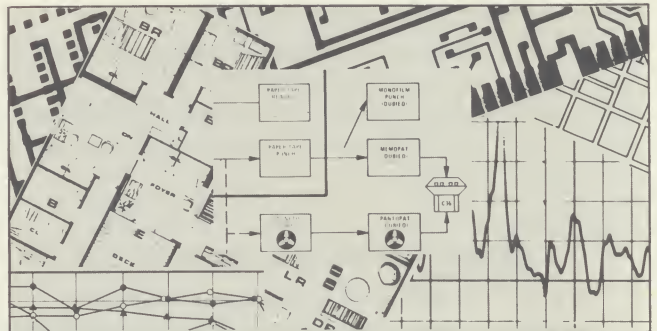
Applications

Similar to the keyboard for alpha-numeric data entry, the digitizer provides the graphic interface between man and machine. Increasingly, digitizers are in widespread use in interactive and off line design and data base systems, enhancing computer processing and automation of functions involving graphic data. Cost effective applications abound in computer aided design (CAD), cartography, planning, oceanography, geology and in various scientific and engineering disciplines.

Digitize to 0.001" resolution and let the Micro Processor perform data normalizing functions (chart rotation alignment, origin presetting, scaling, output formatting, mode control) and data application calculations (area, volume, counting, output unit scaling).

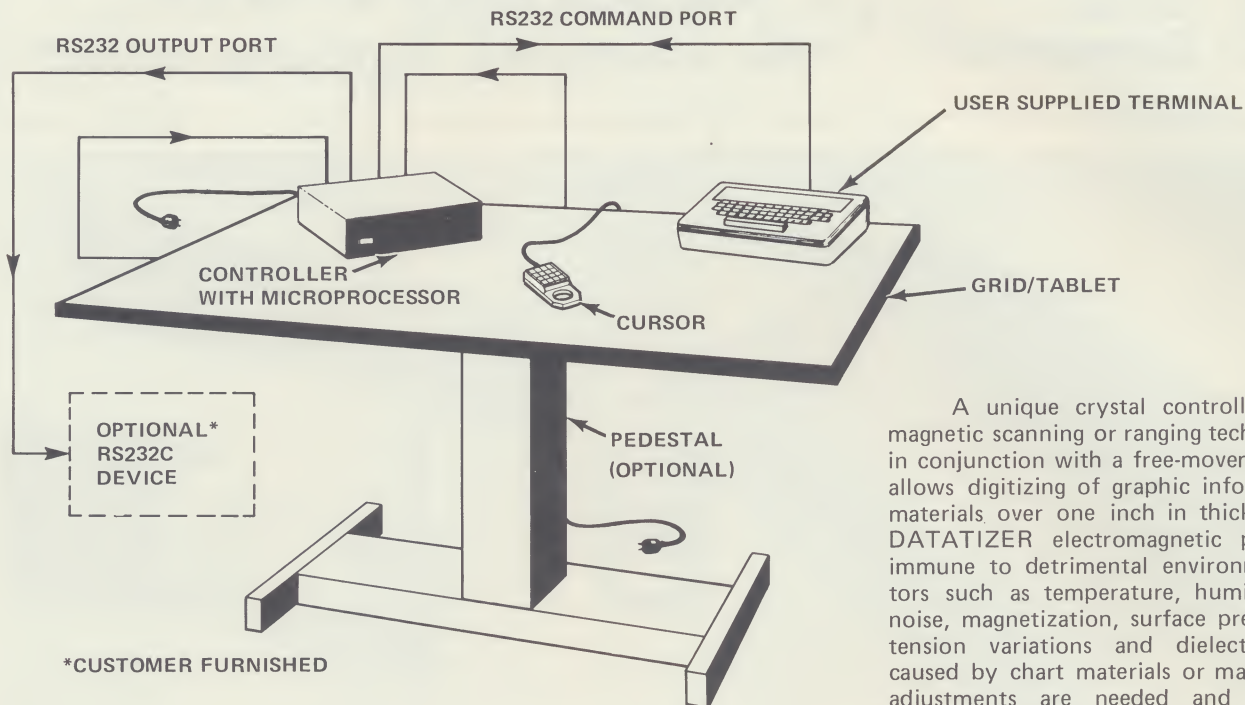
Simple commands entered by remote control or thru a local terminal, are used for controlling all operations.

The precision printed circuit grid tablet, coupled with a unique electromagnetic ranging principle ensures a lifetime of high accuracy digitizing with no adjustments, no preventive maintenance and no detrimental environmental effects.



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System Block Diagram



A unique crystal controlled electromagnetic scanning or ranging technique used in conjunction with a free-movement cursor allows digitizing of graphic information on materials over one inch in thickness. The DATATIZER electromagnetic principle is immune to detrimental environmental factors such as temperature, humidity, sonic noise, magnetization, surface pressure, wire tension variations and dielectric effects caused by chart materials or markings. No adjustments are needed and long term instability inherent with tensioned wires is avoided. The absolute coordinate technique assures maximum speed and efficiency for all digitizing operations since the cursor may be lifted from the surface when moving it to the next point on the drawing or chart. Small tablets do not require the optional pedestal. Pens and cursors are interchangeable.

System Description

The MICRO DATATIZER hardware consists of the following components:

1. Controller — includes digitizing circuitry, microprocessor, memory, interfaces and power supplies. The interface for an RS232C recording device is included.
2. Grid or tablet — the digitizing work surface.
3. Cursor — has crosswire reticle and multiple encodable buttons, a pen cursor is optional.

Optional hardware includes:

1. Pedestal — a stand for mounting the grid which provides tilt (counter balanced) and power-driven height adjustment.
2. Graphic terminal with CAD/CAM compatibility and software.
3. CRT Terminals, Cassette Magnetic Tape, Floppy Disc, Line Printer etc., are available on special request.

Optional software includes:

1. Modifications to standard program.
2. Special customer specified applications programs.

Features

EASE OF OPERATION

The addition of a microprocessor to the GTCO line of proven X-Y DATATIZER tablet/grid coordinate digitizers has not altered the basic simplicity of the system. Input to the optional MICRO Computer is either via a local terminal or by remote control. Input data goes directly to the microprocessor. The microprocessor calculations are output to the command port and to an RS232C Output Interface. Calculations can also be sent to other external device(s) which the customer can choose.

INSTANT PRE-PROGRAMMED CALCULATION

The GTCO MICRO Graphics Software Package is pre-programmed for mode control, prompting, normalizing, counting, formatting, editing and other useful set-up functions, and calculating lengths, areas and volumes.

PUTS DATA INTO RECOGNIZABLE FORM

The operator can deal directly with X-Y coordinates, lengths, areas, volumes and alpha-numeric captions in familiar terms: feet, miles, yards, acres, cubic feet, etc. With no new language to learn, operators master the GTCO MICRO

DATATIZER rapidly. All operator control functions are initiated using simple mnemonic keyboard commands that are immediately displayed for verification. Error messages guide the operator if improper commands are entered.

DIRECT KEY INPUTS OF ALPHA-NUMERIC DATA

The alpha-numeric keyboard mode allows you to directly enter numbers or letters for scales, program instructions, titles, captions or other descriptive legends. Output format specifications are simply typed on the keyboard and provide an almost infinite variation of output formats that can be changed with ease.

ON SITE INTELLIGENCE

The GTCO MICRO DATATIZER can make calculations to limit output data to that which is pertinent and can accumulate and store data for editing prior to recording.

FIELD EXPANDABLE

If your requirements change, new programs can be installed in the GTCO DATATIZER on request and at nominal charge.

General Operation

1. Turn on the MICRO DATATIZER power switch located on the Controller. Observe that the display shows TYPE COMMAND.
2. Perform setup operations as required for the application. These may include setting scale factors, establishing an output format, designating an output device, etc. The Setup Mode Command Summary lists the setup operations which may be carried out.
3. Type DM to enter the Digitizing Mode. After pressing a cursor call button digitized points are shown on the display. The values displayed are the result of several calculations, as specified by the setup commands, performed on the raw data. The MICRO DATATIZER begins with the coordinate values from the absolute coordinate system of the tablet. These

- values are modified to account for the rotation of the chart on the tablet, the location of the true origin and the chart scale factors for each axis. In addition to these basic calculations, the MICRO DATATIZER can perform length, area and volume calculations during the Digitizing Mode. These facilities are detailed in the Digitizing Mode Command Summary.
4. The Shift Chart command permits using a small tablet to digitize strip charts, maps or drawings, larger than the tablet simply by digitizing the same two points before and after shifting the hard copy. This command is also useful in merging data from two completely different chart sources even with different scale factors.

MICRO DATATIZER

Command Category	Function	Keyboard Entry Command
SETUP MODE COMMAND SUMMARY		
Chart Setup	Enter Setup Mode (from Digitizing Mode) Two/Three Point Chart Setup Shift Chart	ESCAPE TP SC
Digitizing Techniques	Set Digitizing Method (freeze, point, continuous, incremental, vector & grid) Set Increment/Grid Set Interval	SM IX, IY IN
Format	Set Format Specification Set Character String Set Cursor Identification Set Event Counter Assign Format to Pushbutton	FMn (n=1-4) CHn (n=1-6) IDn (n=1-4) ECn (n=1-2) PBn (n=1-B)
Output	Set Output Method Enable Output Device Set Block Length Set Fill Character	OM OD BLK FC
Length	Set Length Register Set Length Multiplier Set Length Accumulator	LR LM LA
Area	Set Area Register Set Area Multiplier Set Area Accumulator	AR AM AA
Volume	Set Volume Multiplier Set Volume Accumulator	VM VA
Chart Variables	Set Scale Factor Set Offset	SX, SY OX, OY
Miscellaneous	Reinitialize Calculator	CONTROL R CA
DIGITIZING MODE COMMAND SUMMARY		
Length Commands	Enter Digitizing Mode (from Setup Mode) Begin Length End Length Clear Length Accumulator Add Length to Length Accumulator	DM BL EL CL AL
Area Commands	Begin Area End Area Clear Area Accumulator Add Area to Area Accumulator	BA EA CA AA
Volume Commands	Clear Volume Accumulator Add Volume to Volume Accumulator	CV AV
Output	Output Summary Empty Buffer (manual) Buffer Editing	OS Break Key



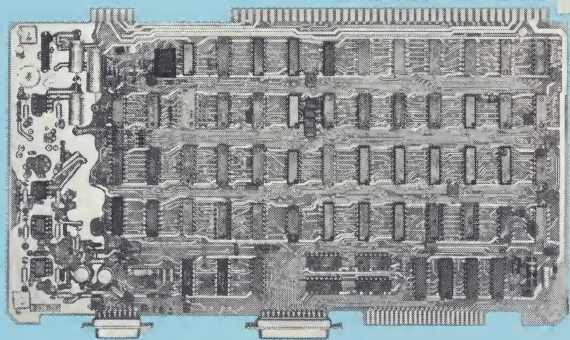
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DATATIZER™



*Exclusive 2-Year Warranty



9 big reasons why OEM's choose GTCO Digitizers & X-Y Tablets

Performance

GTCO DATATIZER X-Y tablets or digitizers give the best overall performance at the lowest overall cost.

Technology

Electromagnetic Absolute Ranging Digitizing (the superior operating principle) offers high performance digitizing through non-metallic material with up to a 1.0" thickness.

Simplicity

Only three items—tablet or digitizer work surface, cursor and a controller—represents a complete system.

Interfacing

Serial pulse or parallel data interface is standard. RS-232 and Micro/Firmware options available. Require +5V and ± 12 to ± 15 V.

Options

Eight standard tablets sizes from 6" x 6" to 42" x 60" (all sizes compatible with any cursor and controller) Resolution 0.001" (0.025 mm, 0.1 mm) and 0.010" (0.25 mm, 1.00 mm) Accuracy ± 0.005 ". Optional ± 0.003 " ($1\sigma = 1$ mil).
Backlighting
Rear Projection
Crosswire and Pen Cursors
Micro/Firmware
Stand Alone Systems

Trouble Free

No adjustments, no preventive maintenance and no detrimental environmental effects.
UL and CSA approval pending.

Reliability

Tablets* feature precision printed circuit grid for a lifetime of rugged, stable performance backed by an exclusive 2-year warranty.

Cursors feature rugged, high-impact case and operate at high signal levels without preamps. Cursor switches field replaceable.

Controller contains all active DATATIZER circuits and uses common 7400LS IC's located on one small plug-in controller board.

Interchangability

All tablet sizes, cursors and controllers may be interchanged without requiring adjustment.

The Company

GTCO is an established graphic technology company with a better idea. We challenge you to evaluate and compare our technology and products and then join our Fortune 500 List of OEM users who are purchasing the new patented GTCO DATATIZER.



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